Determining Growing Area Classification and Writing Upward Classification Proposals

In determining the appropriate classification for a growing area and when considering upgrades in classification, DMR staff consider a variety of factors, and are required to complete a comprehensive assessment of water quality data and pollution sources that may impact shellfish growing areas. These assessments are included in the growing area reports, and are peer reviewed by senior water quality staff prior to any classification changes being implemented.

There are two different methods that DMR staff members use when assessing water quality data for classification purposes. One method is used for **establishing** or **modifying** (upgrading) classifications; the other method is used for **maintaining** an already established classification. There are key differences between the two methods. The main difference concerns the datasets that are used to complete each assessment. Water quality data is collected from established seawater sample locations under three different sampling regimes: systematic random samples (SRS), Extra, and Adverse. The collection of SRS samples for each growing area is prescheduled for the entire year; SRS collection dates can only be re-scheduled if an emergency and/or major safety concern situation (ex: flood closure, snow storm, ice storm) precludes sample collection activities. The pre-scheduled sample dates do not target any particular event (rainfall, snowmelt, etc). The model ordinance (MO) sets requirements for the minimum number of samples collected using SRS strategy. Results from SRS samples are used for both establishing and maintaining growing area classifications. "Extra" samples are collected beyond the minimum sample requirements set by the MO; similarly to SRS samples, collection dates are prescheduled and do not target any specific adversities. As with SRS samples, results from "extra" samples are used for both establishing and maintaining growing area classifications. Typically, this sample strategy is implemented after a pollution source has been abated, and a more frequent sample collection schedule is warranted to assess if water quality has returned to pre-pollution insult levels. Under the "Adverse" strategy, samples are scheduled to target a specific adversity (rainfall, snowmelt, stormwater run-off, WWTP malfunction, etc). Results from these samples provide better information for assessing the impact of specific conditions on water quality, by targeting specific conditions. Adverse strategy datapoints are used in the determination and establishment of growing area classification; they are not used in maintaining already established classifications from year to year. In summary, the dataset used for maintaining existing classifications relies only on SRS and Extra (accelerated sampling) datapoints; the dataset that is used for determining and establishing classifications relies on data from all three strategies. Additionally, the method for maintaining an already established classification uses a dataset limited to the 30 most recently collected SRS and extra datapoints. The method used for establishing or modifying (upgrading) classifications does not have a limit on the number of datapoints that can be used in the assessment.

The variety of factors that may lead to an area being proposed for an upgrade in classification may include, but are not limited to the following: remediation of known pollution sources and/or malfunctioning septic systems, removal of licensed OBDs, improvement of water quality over time, completion of a dilution study, and completion of shoreline survey work. In completing

these assessments, DMR staff consider the results from multiple water samples (a minimum of 30), collected under a variety of environmental conditions and using different sample collection strategies (random (SRS), extra, and adverse). The majority of the samples collected and evaluated by DMR are collected by SRS strategy. However, when completing assessments for areas where a classification change is being considered, DMR staff may not consider solely the 30 most recent datapoints collected using the random (SRS) strategy. They must ensure that water quality datapoints cover a variety of environmental conditions. For example, if a SRS dataset for a particular area lacks water quality results from samples collected after rain events, the dataset is supplemented with datapoints from samples specifically scheduled to target rainfall events (Adverse strategy samples). Similarly to rainfall, if a SRS dataset lack data points for a particular season, the dataset is supplemented with additional results from samples specifically targeting a particular period of time. Until a dataset provides a sufficient number of datapoints to adequately assess the effect of precipitation (or any other variable- seasonality, non-point pollution, etc) on fecal scores, and thus enabling the DMR staff to determine the appropriate classification for such area, the area's classification is not modified.

Classification upgrades for areas that have shown an improvement in water quality over time, but where no pollution source remediation work (repair of septic system malfunctions, removal of OBDs or old holding tanks, implementation of farm BMPs) can be attributed to such water quality improvements, are particularly challenging. In such situations, a water quality assessment must include a determination of conditions under which the area had failed to meet the approved standard in the past. Once this condition is determined, DMR staff members are required to ensure that the more recent water samples have been collected under these conditions. If the recent water quality results show that these conditions no longer result in elevated fecal scores, then the area is able to be proposed for a classification upgrade. However, if the more recent datasets do not contain datapoints that fall under such conditions, DMR staff members are required to collect additional datapoints targeting such conditions to supplement the dataset. Until an assessment can be made to determine that the conditions under which the area had failed to meet the approved standard in the past is no longer a concern for public health, the area may not be reclassified.

In summary, DMR staff members consider the following variables and conditions when proposing upward classification changes, or when determining classification for areas which were previously closed to shellfish harvesting:

1) Did the dataset adequately cover all levels of precipitation events, under which the area will be open to shellfish harvesting (consider all strategies, not just most recent SRS data points)

2) Did the dataset adequately cover all seasons/time periods? (consider all strategies, not just most recent SRS data points)

3) If remediation efforts took place, does the dataset adequately cover all precipitation events and seasons after such remediation effort had taken place (must ensure that water quality has returned to approved standards after all conditions under which the area will be open)

4) If no remediation effort took place, has the condition which caused the area to fail in the past been determined? If so, have more recent water quality samples been collected under such a condition?

5) Is the shoreline survey for the area current? Are there any pollution sources that have not been remediated present? Are there any OBDs present? Are there any streams draining into an area, and if so, have they been assessed as a possible pollution source?

6) What are the water quality trends for the area- is water quality improving, declining, or holding steady? What is the variability in scores among the recent years?